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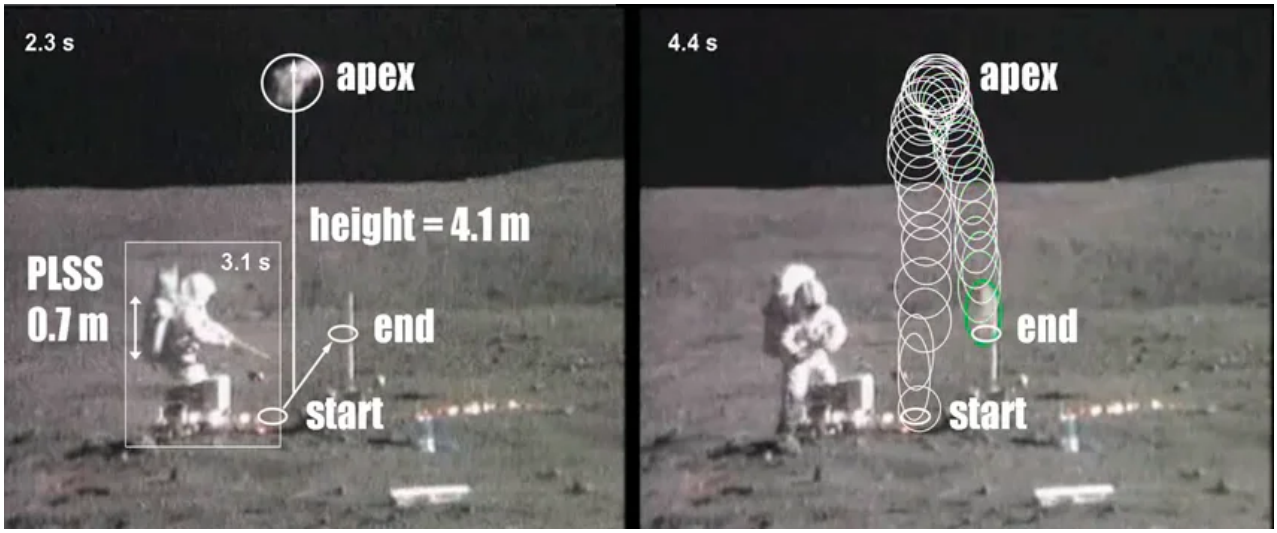
16. Неопровержимые доказательства пребывания американцев на Луне

11-14 minutes

There is a video on Yu-Tuba, where the author gives irrefutable (as it seems to him) evidence that the astronauts filmed videos on the Moon. The evidence is based on the analysis of the throws that the Apollo 16 astronauts perform - where they throw up various objects: boxes, bags, some kind of sticks or cans, and watch them go down. It is difficult to say specifically what these objects are, since the shooting is carried out from a distance of 10-12 meters - most likely, these are parts of some scientific instruments, since it is unlikely that the astronauts took garbage from Earth with them to the moon for scattering.

But the author of the video is not discussing this issue. For him, the main thing is the fact that objects move in exact accordance with lunar gravity.

An astronaut picked up a silvery object lying on the sand with a stick, which looked like a bag or a bag, and threw it up. It is unlikely that this is a plastic bag, since after falling and hitting the surface, it bounced off and bounced up a little. The commentator calculates the height of the rise, it turns out to be 4.1 meters.

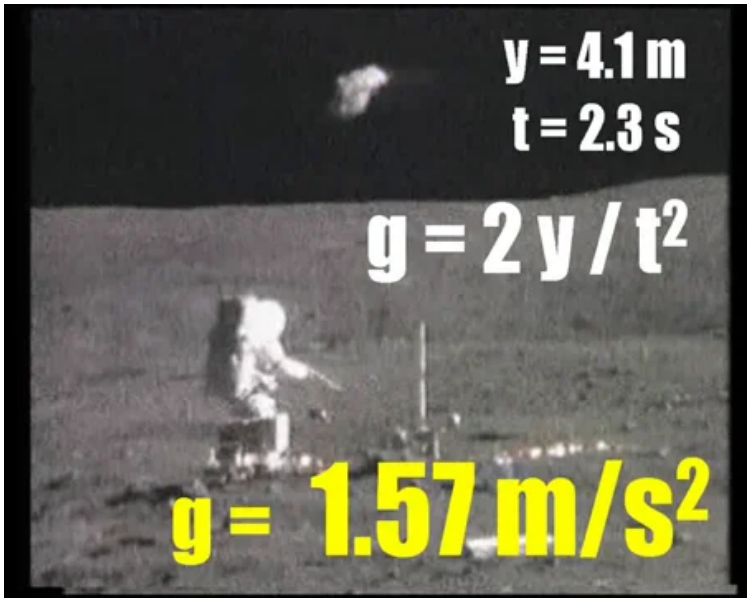


On the left - the astronaut throws the object up to a height of 4 meters, on the right - the trajectory of the flight in frames.

This delights the commentator - such throws can only be made on the moon! We, too, admit, are shocked. Knowing the height of the astronaut and the size of the helmet, which is a total of 2 meters, we find that the astronaut managed to throw the object above his head by as much as 2.1 meters. Incredible - 2 meters above your head! This, of course, is not yet an Olympic achievement, but a very serious claim for a medal. An object can be thrown to such an incredible height only on the Moon!

However, the main attention, according to the author, should be paid to the time during which the object described the parabola and fell to the surface. This time, according to the author's calculations, should be 2.46 times longer than on Earth and, of course, this is how it turns out. The author shows a timer in the upper left

corner of the frame and determines that the entire flight lasted 4.6 seconds (2.3 seconds up and the same number of seconds down) - in exact accordance with lunar gravity. Indeed, if we substitute the height from which the object falls into the formula of uniformly accelerated motion (at the highest point the vertical velocity is zero), then the acceleration value is 1.57 m / s2, which is very, very close to the value of the gravitational acceleration on the Moon, 1.62 m / s2.



Calculation of the magnitude of free acceleration at a known rise height and fall time.

So, a falling object on the Moon moves in time exactly as much as it should fall according to the laws of physics. It would seem that everything is proven. However, the author knows that every year there are more and more people who consider themselves realists and who understand that 50 years ago there was no technical opportunity to send a person to the moon and, most importantly, return him alive from there. NASA defenders ("nasarogi") call such people "skeptics." So these skeptics argue that the video was actually filmed on Earth, just slowed down 2.46 times to compensate for the difference in sensation between the lunar and Earth's attraction.

Then the author speeds up the video provided by NASA by 2.46 times and shows that in this case the falling objects looks, indeed, "like on Earth." The object takes off and falls in such a way that it is one-to-one like an earth throw. But what happens to the astronaut? At the same time, the astronaut looks too fussy. The author shows two more throws, speeding up the display by 2.46 times. And again, after the throw, all objects move exactly as we are used to seeing in terrestrial conditions. It would seem that this technique is the best proof that all the action was filmed on Earth. But the author is not satisfied with the fact that with such a display, the astronaut minces quickly with his feet. The author believes that an actor portraying an astronaut in a spacesuit, in principle, cannot quickly mince. That is why he considers it proven that this video was filmed on the moon.

Here is this video (you can start watching from 1 min 24 sec):

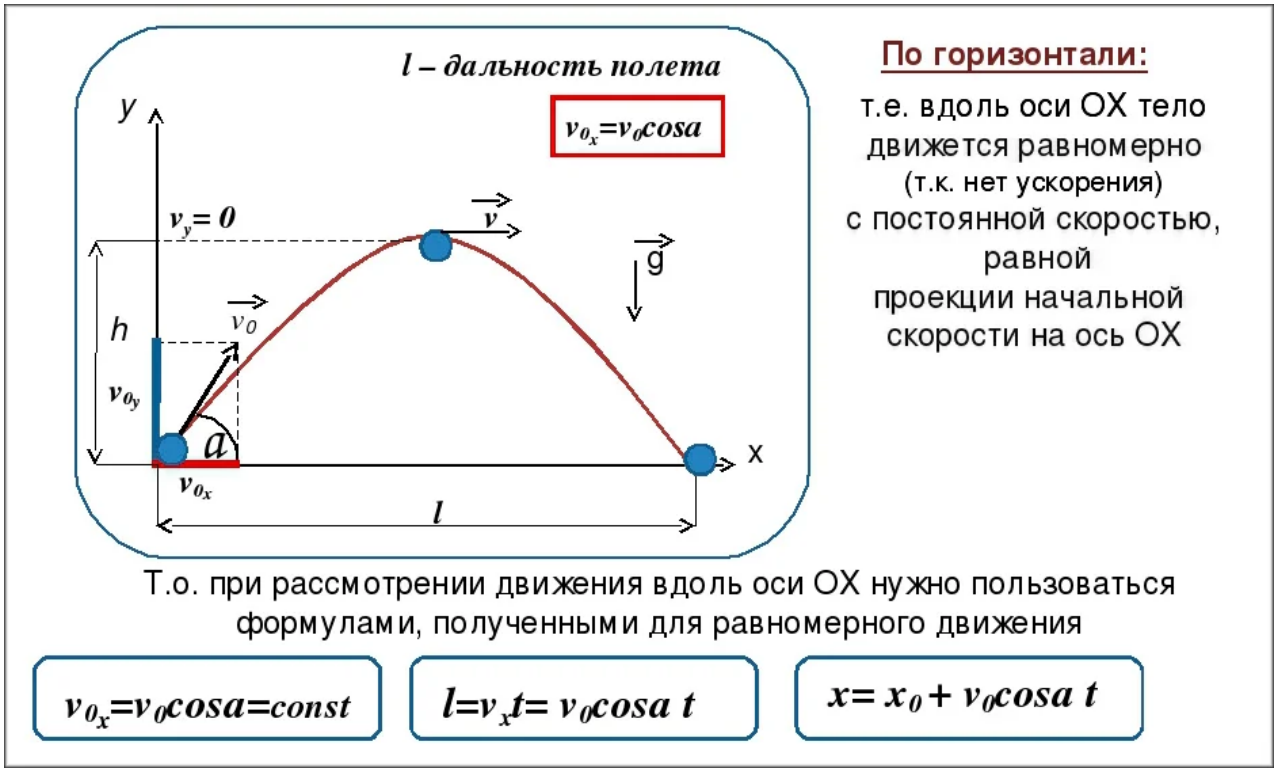
Irrefutable evidence of a man's landing on the moon

Now we are not very interested in the question - can an actor in a fake spacesuit move his arms and legs 2 times faster than he does in everyday life? It is rather a philosophical question - can a person turn his head left and right faster than he usually does, for example, 2 times faster? Can he turn around his axis 2.5 times faster than he does when looking at nature around him? Or jogging with your legs 2 times more often than jogging?

We are interested in something else. We are interested in the flight range, horizontal movement, from the start point to the finish.

Horizontal flight range.

An object thrown upwards at an angle to the horizon moves along the vertical axis OY at first equidistantly, and then, when the speed drops to zero, begins to move along the OY axis, uniformly accelerated, while movement along the horizontal axis OX is uniform, if there is no resistance of the medium (air) ...



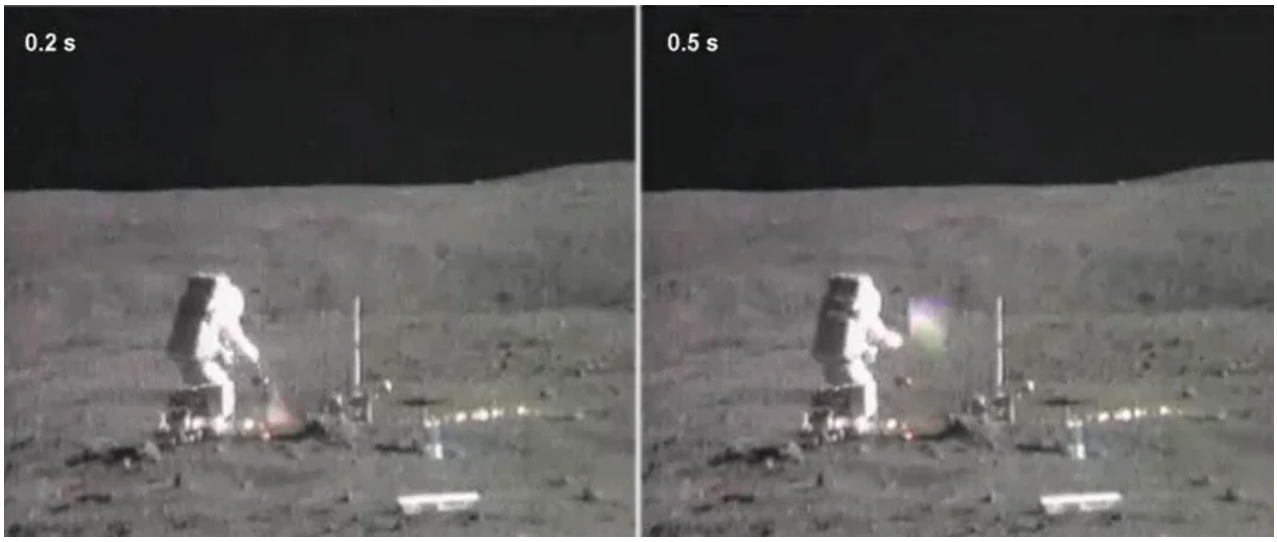
Calculation of horizontal displacement.

In this case, the horizontal component of the velocity is equal to the projection of the initial velocity onto the OX axis, i.e. depends on the cosine of the angle formed with the horizon.

Judging by the picture, the object is thrown at an angle of about 60 °.

To determine the flight range, we need to know the initial throw speed. It is easily determined from the flight time and the magnitude of the free acceleration.

The fact is that the trajectory of movement consists of three parts. Initially, the bag lies motionless, below its speed is zero. The astronaut picks him up with a stick and throws him up. The stick rises to a height of about 1.3 meters, and then the bag flies on its own. Consequently, the first 1.3 meters, uniformly accelerated movement is observed, then the stick goes down, and the bag continues to move upward by inertia. At this moment (at the moment when the bag is detached from the stick), it has the maximum speed, and the movement turns into equally slowed down. At the upper point, which the author calls the apex, the vertical component of the velocity decreases to zero. The first part of the trajectory (up to the separation of the bag from the stick) takes 0.5 s.



The separation of the package from the stick occurs after 0.5 s (figure on the right).

Further, the ascent upward by inertia takes 1.8 s. To rise to such a height, the object must have a lift-off speed (when thrown at an angle of 60 °) a little more than 4 m / s:

$V = t * g / 2 \sin \alpha = 4.6 * 1.62 / 2 * 0.866 = 4.3$ (m / s)

With this speed, the flight range will be approximately 10 meters:

$L = v * \cos \alpha * t = 4.3 * 0.5 * 4.6 = 9.89$ (m)

Is it a lot or a little, the speed of the throw is 4.3 m / s? If at such a speed during physical education a schoolboy threw a rubber ball with his foot, then he would fly away (you will not believe it!) Less than 2 meters in length.

How else can you characterize the throw speed of 4.3 m / s? Imagine that you are sitting at home on a chair with slippers on your feet. And so you kicked once - threw a slipper, and it flew off 2 meters. When you start experimenting with a sneaker, you may not be able to immediately throw 2 meters, because without preliminary training, the sneaker strives to fly 5 meters away.

Therefore, the throw shown in the video in the Apollo 16 mission is more like the throw of a child from 3 to 5 years old - after all, we managed to throw a light object only 2 meters above the head!

And the other throws shown in this place do not look impressive either. Astronauts begin to break some kind of scientific device, break off a metal console that looks like a stick, throw it into the distance, then break off a side wall that looks like a sheet of plywood, and throw it too. And all these throws are very modest, all the debris fly

very low and fly 10-12 meters. Although it is clear that the actors-astronauts with force and great swing throw debris. But the result is disastrous. Something rather weak for trained men!

Throwing objects at different speeds.

Or maybe, in fact, they are not so weak, they just slowed down their real movements by 2.5 times? After all, if we admit that the shooting of this episode was made on Earth, then it turns out that the real speed of the throw is not 4.3 m / s, but much more - about 10 m / s.

If you take the slipper in your hand and throw it at an initial speed of 10 m / s at an angle of 45 ° to the horizon, then it will fly off 10 meters. Is this a lot? With such a flight length of 10 meters, even girls 9-10 years old at school will not receive a physical education test. Girls 9-10 years old must throw a ball weighing 150 g at 13-17 meters.

— бронзовый значок — серебряный значок — золотой значок

СТУПЕНЬ (ВОЗРАСТ)	ДИСЦИПЛИНА	МАЛЬЧИКИ			ДЕВОЧКИ		
2 ступень — для 9-10 лет	Метание мяча весом 150 г (м)	24	27	32	13	15	17
3 ступень — для 11-12 лет	Метание мяча весом 150 г (м)	25	28	34	14	18	22
4 ступень — для 13-15 лет	Метание мяча весом 150 г (м)	30	35	40	18	21	26

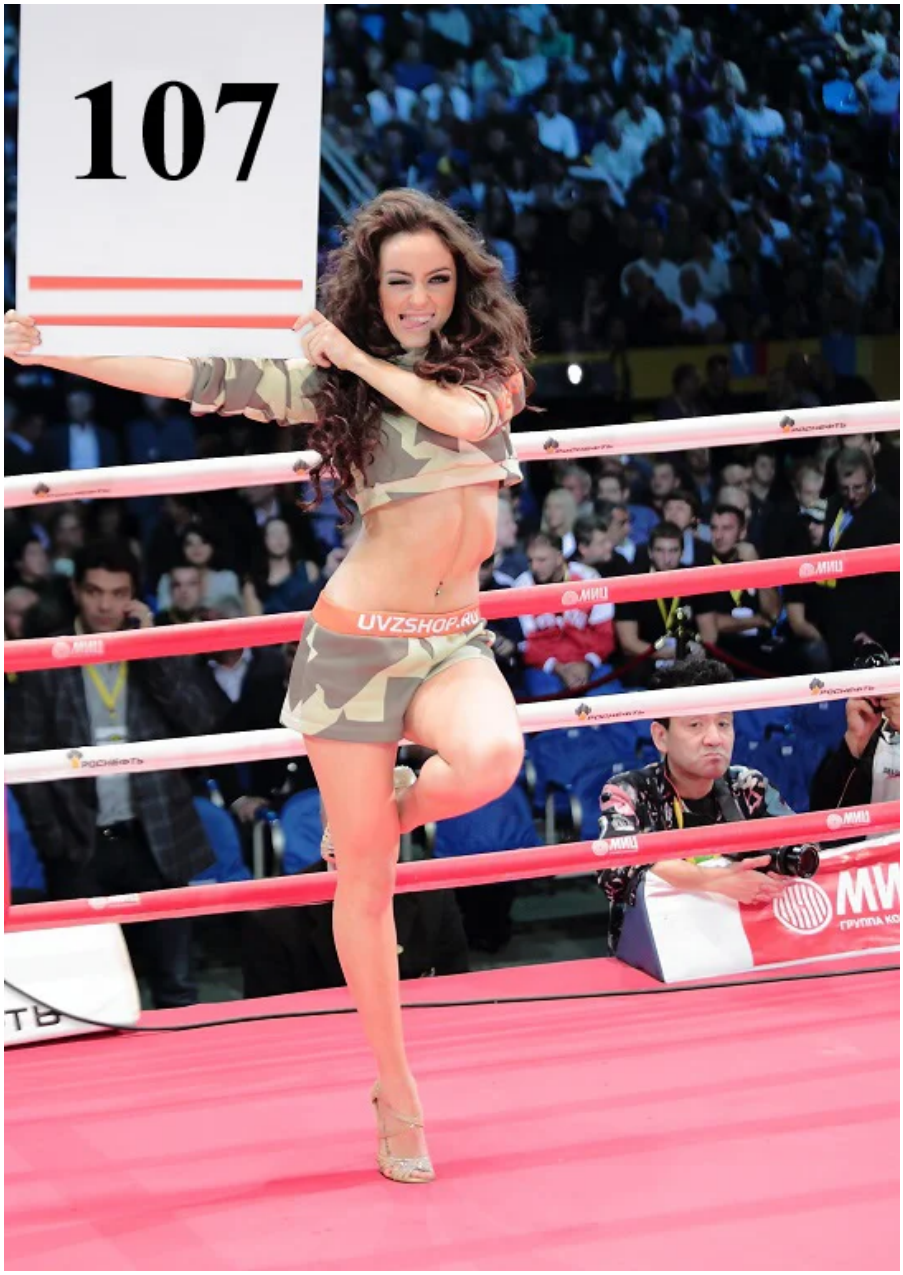
TRP standards for schoolchildren (ball throwing).

And boys at this age (9-10 years old) should throw the ball 24-32 meters. With what speed should the ball fly out of the hand of a 9-year-old boy in order for him to pass the TRP standards for a gold badge? We substitute the path length (32 m) into the formula and we get the speed - 17.9 m / s.

We all know what 9-year-old schoolchildren look like - they are students in grades 2-3.

2nd grade students.

Now imagine that with the same force and speed as a 9-year-old schoolboy, an astronaut on the moon hurled an object at a 45 ° angle to the horizon. Do you know how many meters the ball should fly away? Attention! Drum roll ... A girl comes on stage with a sign where this record is indicated!



This is how many meters the ball should fly on the moon from the throw of a 9-year-old boy.

The object on the moon must fly 107 meters away from the throw of a 2nd grade student!

Of course, we do not see anything even close to this in lunar missions. The object from the astronauts flies away only 10 meters, maximum 12 meters. And let's be honest, it is forbidden to throw further. And that's why.

If you look closely at the "lunar" landscape, you will notice that approximately in the middle of the frame there is a horizontal line, where the texture of the lunar soil changes. You already know that at this point the filled soil in the pavilion transforms into the image of the soil on the vertical screen. There, like in a theater, a "backdrop" hangs.

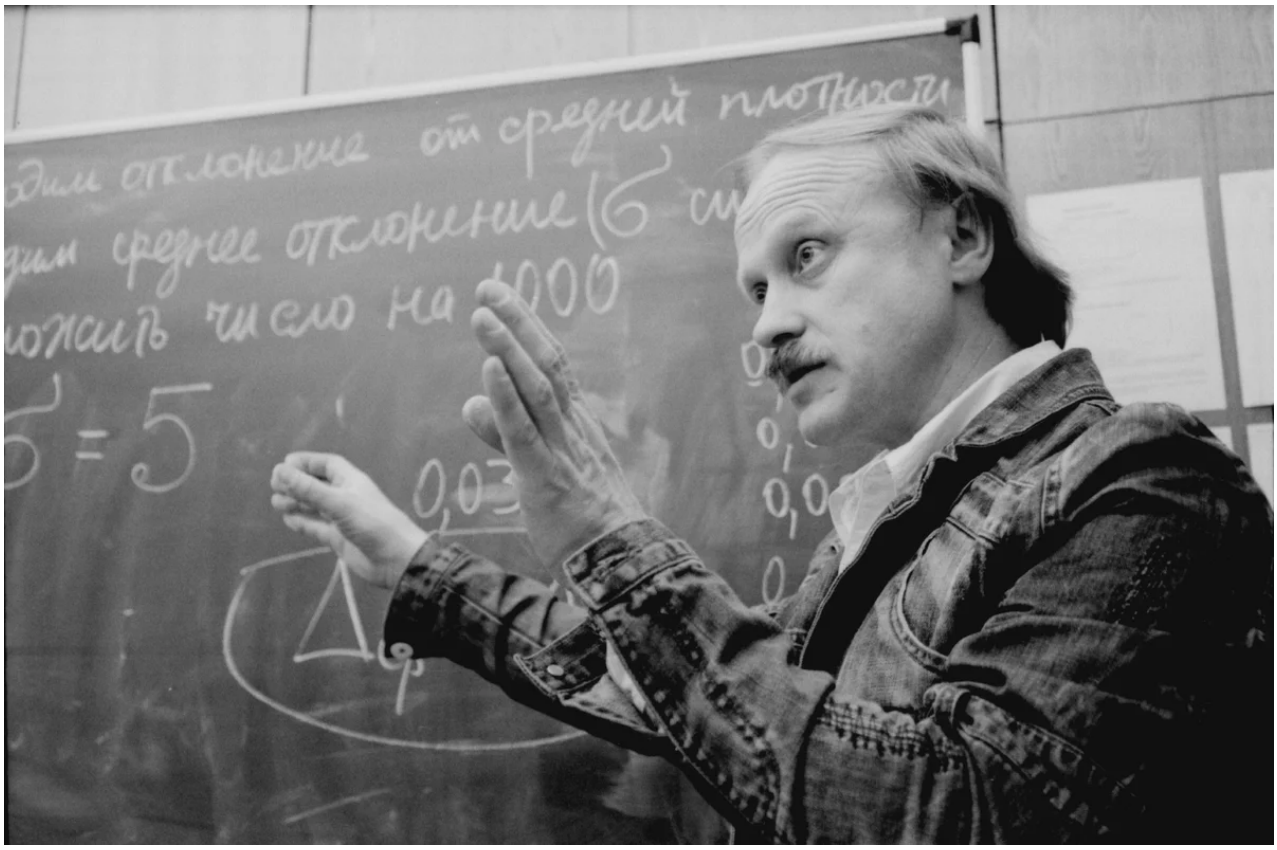
The distance to the screen is about 26-27 meters, and to the actors in the foreground - 9-10 meters. Shooting is done with a wide-angle lens. The actors try to move in the same plane, bypassing each other and not moving further from the camera more than 12 meters. When they throw heavy objects, those, having flown about 10 meters, hit the surface, jump once or twice, and still roll back 3-4 meters. Thus, the thrown object sometimes stops 2-3 meters from the screen (backdrop). Throwing objects further is simply dangerous - they can poke a hole in the "landscape".

So, analysis of the video shows that the astronaut actors just throw objects up 3-4 meters or throw them 10-12 meters into the distance. It is simply pointless to wait for them to show a cast "like on the Moon", 100 or more meters in length: everything is filmed in terrestrial conditions in the pavilion. It is precisely due to the fact that the flight length is very small, the throw is never removed "in profile", the actors never throw objects along the screen to the left or right (as in the diagram, where the formulas for calculating the flight range are given), they are thrown only somewhere in depth, so that it was difficult to estimate the real flight range. The throw is filmed at a high speed, and shown with a slowdown of 2.5 times, because of this, it seems that the astronauts barely move their arms, the force and speed of the throw is obtained, as in 5-year-old children.

In your opinion, can throws 10-12 meters into the distance be proof that they were made on the Moon?

* * *

Cameraman L. Konovalov was with you.



I explain to the student cameramen what the "granularity" of a film is.

Until next time!